UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/746,113	12/21/2000	Hui Wang	3375	2203

22886 7590 07/03/2006

AFFYMETRIX, INC
ATTN: CHIEF IP COUNSEL, LEGAL DEPT.
3420 CENTRAL EXPRESSWAY
SANTA CLARA, CA 95051

EXAMINER	
CALAMITA, HEATHER	
ART UNIT	**PAPER NUMBER**
1637	

DATE MAILED: 07/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/746,113	WANG ET AL.	
	Examiner	Art Unit	
	Heather G. Calamita, Ph.D.	1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20 and 24-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20 and 24-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of Application, Amendments, and/or Claims

1. Claims 1-20 and 24-31 are currently pending and under examination. Any objections and rejections not reiterated below are hereby withdrawn.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 11-15, 18-20, 24 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Weidenhammer et al (USPN 6,379,897).

Weidenhammer et al. teach (claim 1) a method for detecting different mRNAs in a sample comprising (see col. 14 line 16-46):

hybridizing the sample with a microarray substrate, wherein the substrate has a plurality of different immobilized probes and wherein the probes are suitable for multiple bases primer extension reactions (see col. 14 line 16-46);

synthesizing primer extension products with a nucleic acid polymerase, appropriate reagents and conditions, from the primers and using the mRNAs as templates wherein the primer extension products comprise 5' regions of the mRNAs (see col. 14 line 16-46); and

detecting the primer extension products to determine the level of said different mRNAs wherein target regions of the probes are distributed along the mRNAs (see col. 2 lines 42-50). For example IL-6 in col. 25 where there is a 500 bp fragment a 250 bp fragment and a 100 bp fragment. They detect fragments of transcripts (see col. 22 line 23-25).

With regard to claims 2 and 3, Weidenhammer et al. teach the nucleic acid polymerase is a thermostable reverse transcriptase (see col. 14 line 16-46).

With regard to claim 4, Weidenhammer et al. teach oligonucleotide probes (see col. 12 lines 27-34).

With regard to claim 5, Weidenhammer et al. teach oligonucleotide probes immobilized on the substrate in a 5'-3' direction (see col. 12 lines 27-34).

With regard to claims 11-15, Weidenhammer et al. teach 100 probes (see col. 9 line 14).

With regard to claims 18-20, Weidenhammer et al. teach the extension products are detected with a label incorporated during synthesizing (see col. 14 lines 30-33).

With regard to claims 24 and 25, Weidenhammer et al. teach labeled dNTPs (see col 14 line 34-40).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly

owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6-10, 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weidenhammer et al (USPN 6,379,897) in view of Heller et al (USPN 5,605,662).

The teachings of Weidenhammer et al are described previously.

Weidehammer do no explicitly teach synthesis of probes.

With regard to claim 6, Heller et al. teach probe (via combinatorial synthesis) synthesis (see col. 21 lines 1-43). With regard to claims 7-10 Heller et al. teach detection of multiple RNAs, DNA is exemplified, however RNA is disclosed in col. 17 line 15 (see col. 18 lines 39-40). With regard to claims 16-17, Heller et al teach 10,000 probes per cm^2 (see col. 18 lines 39-40).

It would have been prima facie obvious to utilize the method of sequencing as taught by Heller et al. with the array and method of detecting RNA as taught by Weidehammer et al. since Heller et al. (USPN 5,605,662, 02/25/1992) note "that combinatorial synthesis allows very large numbers of sequences to be synthesize on device (see col. 20 line 60-62)." An ordinary practitioner would have been motivated to use the method of sequencing as taught by Heller et al. with the array and method of detecting RNA as taught by Weidehammer et al. in order to produce a large number of probes within the microlocations of the microarray. Moreover, it would have been prima facie to increase the number of probes within the microlocation to detect a greater number of different RNA targets.

4. Claims 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weidenhammer et al (USPN 6,379,897) in view of Heller et al (USPN 5,605,662) in further view of Chee et al (USPN 5,837,832)

The teachings and suggestions of Weidenhammer et al and Heller et al are described previously.

Weidenhammer et al do not teach tiling.

Chee et al teach tiling (see col. 5 lines 50-67 and col. 6 lines 1-13).

One of ordinary skill in the art would have been motivated to apply Chee's tiling technique to the combined invention of Weidenhammer and Heller et al in order to examine regions of genes. It would have been prima facie obvious to apply Chee's tiling to Weidenhammer's probes in order to detect sequence variation in exon boundaries.

5. Claims 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weidenhammer et al (USPN 6,379,897) in view of Combimatrix (2001).

The teachings of Weidenhammer et al. are described previously.

Weidenhammer et al. do not teach (claims 30-31) fragmenting RNA

Combimatrix teach fragmenting RNA (see p. 4).

It would have been prima facie obvious to utilize the array and method of detecting RNA as taught by Weidenhammer et al. with fragmented RNA as taught by Combimatrix (2001) since Combimatrix (2001) state, "RNA targets should be fragmented to maximize binding specificity and detection sensitivity (see p. 4)." An ordinary practitioner would have been motivated to use the array and method of detecting RNA as taught by Weidenhammer et al. with fragmented RNA as taught by Combimatrix (2001) in order to maximize the binding specificity of the RNA to the array while also increasing detection sensitivity.

Response to Arguments

6. Applicants' arguments with respect to the 102 rejections have been fully considered but are not persuasive.

Applicants argue Weidenhammer fail to disclose detecting the primer extension products to determine the level of different mRNAs where the target regions of the probes are distributed along the mRNAs. This is not persuasive because at col. 2 lines 65-67 to col. 3 line 1, Weidenhammer teach the cDNAs are generated from mRNA so in col. 25 where there is a 500 bp fragment a 250 bp fragment and a 100 bp fragment, fragments of transcripts are detected.

With respect to the 103 rejections Applicants' arguments regarding the application of Weidenhammer are moot as the application of Weidenhammer has been clarified. Additionally Applicants argue it would not have been obvious to a person of skill in the art to combine and or modify the references to make the claimed invention. This is not persuasive because Applicants fail to specifically point to the supposed deficiencies of the rejection.

Summary

7. No claims allowed.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Heather G. Calamita whose telephone number is 571.272.2876 and whose e-mail address is heather.calamita@uspto.gov. However, the office cannot guarantee security through the e-mail system nor should official papers be transmitted through this route. The examiner can normally be reached on Monday through Thursday, 7:00 AM to 5:30 PM.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Gary Benzion can be reached at 571.272.0782.

Papers related to this application may be faxed to Group 1637 via the PTO Fax Center using the fax number 571.273.8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to 571.272.0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public. For more information about the PAIR system, see http://pair-direct.uspto.gov.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

hgc

TERESA STRZELECKA
PATENT EXAMINER
Teresa Strzelecka
6/26/06